

# Assignment 1

## Number Systems and Sets; Positive Integers

Textbook Assignment: Chapters 1, 2 (7-18)

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- 1-1. Which of the following Navy personnel have a need for this course?
1. Storekeepers
  2. Damage Controlmen
  3. Electronics Technicians
  4. All of the above
- 1-2. An understanding of mathematics has an important effect upon an officer's potential success.
- 1-3. Which of the following groups of symbols could represent a number?
1.  $7 \times 2$
  2.  $8/4$
  3. 68-22
  4. All of the above
- 1-4. Which of the following could be classified as an integer?
1. 9
  2. 76
  3. 5,280
  4. All of the above
- 1-5. In our numbering system the place value of each digit is
1. higher than that of the digits to the left of it
  2. lower than that of the digits to the left of it
  3. the same as that of the digits to the right of it
  4. lower than that of the digits to the right of it
- 1-6. What does the zero mean in the number 6,509?
1. There are no tens.
  2. It causes the 5 to stand for 50.
  3. There are no hundreds.
  4. It causes the 9 to stand for 9 tens and not 9 ones.
- 1-7. Which figure is in the "thousands" place in the number 850,179?
1. 0
  2. 1
  3. 5
  4. 8
- 1-8. Which figure is in the "ten thousands" place in the number 516,789,240?
1. 6
  2. 7
  3. 8
  4. 9
- 1-9. How is the number 15,026,745 read?
1. Fifteen million, twenty-six thousand, seven hundred forty-five
  2. Fifteen billion, twenty-six thousand, seven hundred and forty-five
  3. One billion, five million, twenty-six thousand, seven hundred forty-five
  4. Fifteen million, two hundred sixty thousand, seven hundred and forty-five
- Numbers written in systems other than the decimal system should have the base noted as a subscript, that is,  $204_5$  is a base five number,  $111_2$  is a base two or binary number, etc.
- 1-10. The 2 in the number  $214_5$  means
1. two 125's
  2. two 100's
  3. two 25's
  4. two 5's
- 1-11. How many digit symbols are used to perform all the calculations involved in the binary system?
1. 2
  2. 5
  3. 8
  4. 10
- 1-12. The binary equivalent of decimal 6 is
1. 011
  2. 101
  3. 110
  4. 111
- 1-13. The binary equivalent of decimal 15 is
1. 0110
  2. 0111
  3. 1001
  4. 1111

- 1-14. The number system which is most commonly used in digital computers is the
1. octal
  2. binary
  3. ternary
  4. decimal
- 1-15. A collection of symbols which have at least one common characteristic is called a
1. set
  2. group
  3. series
  4. quantity
- 1-16. Which of the following is a set of the even positive integers less than 10?
1. {2, 4, 6, 8}
  2. {0, 2, 4, 6, 8}
  3. {2, 4, 6, 8, 10}
  4. {0, 2, 4, 6, 8, 10}
- 1-17. Which of the following correctly designates a set of the names of days of the week which contain the letter "u" and are between Sunday and Saturday?
1. {Tuesday, Thursday}
  2. {Sunday, Tuesday, Thursday}
  3. {Tuesday, Thursday, Saturday}
  4. {Sunday, Tuesday, Thursday, Saturday}
- 1-18. A group of symbols encompassing a part of a set is called a
1. group
  2. subset
  3. subgroup
  4. quantity
- 1-19. What is used in mathematics to indicate that a pattern continues indefinitely?
1. A dot
  2. A line
  3. Three dots
  4. Three hyphens
- 1-20. Although a dot is used to represent it, a point actually has no length, width, nor thickness.
- 1-21. In mathematics, which statement describes an ideal line?
1. It has length and thickness, but no width.
  2. It has length and width, but no thickness.
  3. It has length, but no width nor thickness.
  4. It has length, width, and thickness.
- 1-22. A mathematical plane is determined by three points which do not lie on the same line.
- 1-23. A mathematical line may be considered as a subset of a plane surface.
- 1-24. When a series of points with no space between them begins at a point and is extended infinitely in one direction only, how may the series be identified?
1. As a ray
  2. As a half-line
  3. As a line segment
  4. As either 1 or 2 above
- 1-25. A set of points comprising a plane has subsets called
1. rays
  2. lines
  3. line segments
  4. all of the above
- 1-26. Uses of a scale include
1. tire gage
  2. yard stick
  3. thermometer
  4. all of the above
- 1-27. If the inch between 1 and 2 on a one-foot rule could be stretched to 1 mile, how many numbers could be inserted between the 1 and the 2?
1. 1,760
  2. 5,280
  3. None
  4. An infinite quantity
- 1-28. In the subtraction problem,  $12 - 3 = 9$ , the numeral 3 is called the
1. addend
  2. minuend
  3. subtrahend
  4. quotient
- 1-29. The most common method of arranging the addends 467, 1382, and 17 in a vertical column for addition is
1. 
$$\begin{array}{r} 17 \\ 467 \\ 1382 \end{array}$$
  2. 
$$\begin{array}{r} 467 \\ 1382 \\ 17 \end{array}$$
  3. 
$$\begin{array}{r} 467 \\ 1382 \\ 17 \end{array}$$
  4. 
$$\begin{array}{r} 1000 + 300 + 80 + 2 \\ 400 + 60 + 7 \\ 10 + 7 \end{array}$$

1-30. In the addition problem

$$\begin{array}{r} (1) \\ 57 \\ \underline{36} \\ 93 \end{array}$$

why is the numeral (1) carried to the tens column?

1. Ten must be borrowed from the tens column.
2. The numeral 3 is the place holder.
3. The sum of the units column exceeds 9.
4. This is the remainder after subtracting 10.

1-31. The concept of carrying in addition is often explained by regrouping the addends of a problem. What is the proper regrouping of the addends 1001, 416, and 908?

$$\begin{array}{r} 1. \quad 1000 + 0 + 1 \\ \quad 400 + 10 + 6 \\ \quad \underline{900 + 0 + 8} \end{array}$$

$$\begin{array}{r} 2. \quad 1000 + 0 + 0 + 1 \\ \quad 400 + 1 + 6 \\ \quad \underline{900 + 0 + 8} \end{array}$$

$$\begin{array}{r} 3. \quad 1000 + 1 \\ \quad 400 + 1 + 6 \\ \quad \underline{900 + 0 + 8} \end{array}$$

$$\begin{array}{r} 4. \quad 1000 + 0 + 0 + 1 \\ \quad 400 + 10 + 6 \\ \quad \underline{900 + 0 + 8} \end{array}$$

1-32. What is the difference when 35,708 is subtracted from 87,216?

1. 51,208
2. 51,478
3. 51,508
4. 51,538

1-33. Why is borrowing used in the subtraction process?

1. To offset the effect of carrying
2. To keep the columns properly aligned
3. To make the subtrahend larger than the minuend
4. To make the minuend of a column larger than the subtrahend

1-34. How much is 293,094 subtracted from 458,045?

1. 134,951
2. 162,051
3. 164,651
4. 164,951

1-35. In the subtraction problem

$$\begin{array}{r} 72,145 \\ -69,258 \\ \hline 2,887 \end{array}$$

how many columns have been borrowed from?

1. One
2. Two
3. Three
4. Four

1-36. Which of the following rules must you observe when subtracting the quantity 3 hours and 4 minutes from the quantity 5 hours and 10 minutes?

1. Convert each quantity to the nearest whole multiple of the larger unit.
2. Subtract only numbers having units of the same kind.
3. Subtract units of a lower value from units of a higher value.
4. Add units of a lower value and subtract units of a higher value.

1-37. What is the sum of 3 gallons 1 quart and 5 gallons 2 quarts?

1. 8 gallons 2 quarts
2. 8 gallons 3 quarts
3. 9 gallons 2 quarts
4. 11 gallons

1-38. In subtracting the denominate numerals

$$\begin{array}{r} 4 \text{ hours } 6 \text{ min } 28 \text{ sec} \\ -2 \text{ hours } 8 \text{ min } 32 \text{ sec} \\ \hline \end{array}$$

the concept of regrouping is utilized.

1-39. A recommended short method for finding the sum of  $8 + 3 + 7 + 2 + 6 + 4$  is to

1. add the figures by groups of 3
2. form pairs of figures that equal 10
3. form pairs of figures that equal 11
4. add each individual figure successively

1-40. The thought process associated with adding the column  $7 + 3 + 8 + 2 + 5 + 1 + 9$  by recognizing groups of digits whose sum is 10 is

1. 18, 25, 35
2. 10, 20, 25, 35
3. 7, 10, 18, 20, 26, 35
4.  $7 + 3, 10, + 10, 20, + 5, 25, + 10, 35$

- 1-41. By using the beginning-at-the-left method, the successive mental steps associated with subtracting 45 from 83 are
1. 8, 30, 38
  2. 40, 38
  3. 43, 38
  4. 40, +3, -5, 38
- 1-42. The answer to the following mathematical problem,  $2 \cdot 3 \cdot 4 \cdot 5$ , is
1. 14
  2. 120
  3. 480
  4. not defined above
- 1-43. The product of the factors 3, 7, and 2 is
1. 27
  2. 33
  3. 38
  4. 42
- 1-44. The multiplication process is a short process for
1. division
  2. addition
  3. subtraction
  4. factoring
- 1-45. In multiplying a three-digit number by a two-digit number, it is all right to multiply beginning from the left of the multiplier, provided the partial products are written in the correct columns.
- 1-46. One of the steps in multiplying 461 by 508 involves multiplying 1 by 5. The result of this step must be placed in the
1. units column
  2. tens column
  3. hundreds column
  4. thousands column
- 1-47. What is the product of 807 and 307?
1. 27,749
  2. 29,159
  3. 247,749
  4. 248,159
- 1-48. In the multiplication problem

$$\begin{array}{r}
 308 \\
 \underline{14} \\
 1232 \\
 \underline{308} \\
 4312
 \end{array}$$

it is not necessary to write the 0 resulting from "4 times 0 tens is 0" because 0 added to 3 tens is still 3 tens.

- 1-49. Which of the following statements represents an important fact concerning the use of zero?
1. Zero is not a number.
  2. Any number divided by zero remains the same.
  3. Zeros are always dropped in multiplication.
  4. Zero multiplied by any number is zero.

- 1-50. The recommended procedure for multiplying 17 by 80 is

1. $\begin{array}{r} 17 \\ \underline{80} \\ 1360 \end{array}$	3. $\begin{array}{r} 80 \\ \underline{17} \\ 560 \\ \underline{80} \\ 1360 \end{array}$
2. $\begin{array}{r} 17 \\ \underline{80} \\ 00 \\ \underline{136} \\ 1360 \end{array}$	4. $\begin{array}{r} 80 \\ \underline{17} \\ 0 \\ 56 \\ \underline{0} \\ 8 \\ \underline{1360} \end{array}$

- 1-51. The product of 7,000 and 10,000 is
1. 17,000
  2. 7,000,000
  3. 17,000,000
  4. 70,000,000

- 1-52. Although the decimal point is not shown in the product of the multiplication problem  $70 \times 30 = 2100$ , it is understood that the decimal point follows the
1. leftmost zero of the product
  2. rightmost zero of the product
  3. numeral 1 in the product
  4. numeral 2 in the product

- 1-53. To make rapid and concise calculations in division, it is more useful to consider successive subtraction than the inverse of multiplication.

- 1-54. Determine the proper terminology associated with division in the following problem

$$\begin{array}{r} 28 \\ 3 \overline{)85} \\ \underline{6} \phantom{0} \\ 25 \\ \underline{24} \\ 1 \end{array}$$

- |                  |                  |
|------------------|------------------|
| 1. 3 is divisor  | 3. 3 is divisor  |
| 28 is remainder  | 28 is quotient   |
| 85 is dividend   | 85 is dividend   |
| 1 is quotient    | 1 is remainder   |
| 2. 3 is dividend | 4. 3 is dividend |
| 28 is quotient   | 28 is divisor    |
| 85 is divisor    | 85 is quotient   |
| 1 is remainder   | 1 is remainder   |

- 1-55. If a single digit divisor is too large to be contained in the first digit of a four digit dividend, in a division problem, you should

1. divide the first two digits of the dividend by the divisor and place the quotient over the first digit of the dividend
2. divide the second digit of the dividend by the divisor and place the quotient over the first digit of the dividend
3. divide the first two digits of the dividend by the divisor and place the quotient over the second digit of the dividend
4. divide the second digit of the dividend by the divisor and place the quotient over the second digit of the dividend

- 1-56. How would you estimate the first digit of the quotient resulting from dividing 3094 by 68?

1. Divide 30 by 6
2. Divide 309 by 68
3. Divide 309 by 70
4. Divide 310 by 60

- 1-57. In dividing a four-digit number by a two-digit number, the trial quotient is found to be too small when

1. the trial quotient is greater than 10
2. the trial quotient is smaller than 10
3. the new dividend is smaller than the divisor
4. the new dividend is as large or larger than the divisor

- 1-58. Which of the following divisions is an exact division?

1.  $457 \div 9$
2.  $221 \div 13$
3.  $396 \div 13$
4.  $745 \div 25$

- 1-59. What is the remainder when 259 is divided by 8?

1. 1
2. 3
3. 5
4. 7

- 1-60. How much is 22,308 divided by 74?

1. 3,114 with a remainder of 44
2. 287 with a remainder of 70
3. 301 with a remainder of 34
4. 31 with a remainder of 34

- 1-61. If a group of 39 people is to be divided into 4-member teams, how should this division be expressed?

1. 8 teams, R 7
2. 9 teams, R 3
3. 9 teams, R 4
4. 10 teams

- 1-62. The purpose for maintaining proper vertical alinement in division is to assist in placing the decimal point in the quotient.

- 1-63. A division has been accurately performed when the dividend equals the product of the

1. remainder times the divisor plus the quotient
2. remainder times the quotient plus the divisor
3. quotient times the divisor plus the remainder
4. quotient times the remainder plus the divisor

- 1-64. The product, in simplified form, of the multiplication, problem; 4 (2 hours 22 minutes 32 seconds) is
1. 8 hours 88 minutes 128 seconds
  2. 8 hours 90 minutes 8 seconds
  3. 9 hours 28 minutes 8 seconds
  4. 9 hours 30 minutes 8 seconds
- 1-65. The product of 12 miles and 13 miles is
1. 156 miles
  2. miles
  3. 156 square miles
  4. 156
- 1-66. The product of 2 feet 8 inches times 3 feet 4 inches may be found by
1. multiplying 2-feet times 3 feet then multiplying 8 inches times 4 inches
  2. multiplying 3 feet times 2 feet 8 inches then multiplying 4 inches times 2 feet 8 inches
  3. converting 2 feet 8 inches to  $2\frac{2}{3}$  feet and 3 feet 4 inches to  $3\frac{1}{3}$  feet and then multiplying
  4. changing 2 feet 8 inches to 3 feet and 3 feet 4 inches to 4 feet and then multiplying
- 1-67. If a pipe 22 feet 6 inches long is cut into 3 equal lengths, how long are the pieces? (Neglect the width of the saw cuts.)
1. 7 feet 1 inch
  2. 7 feet 3 inches
  3. 7 feet 4 inches
  4. 7 feet 6 inches
- 1-68. The result of dividing 23 hours 31 minutes 20 seconds by 5 is
1. 43 hours  $6\frac{1}{5}$  minutes 4 seconds
  2. 4 hours 0 minutes 4224 seconds
  3. 4 hours 42 minutes 16 seconds
  4. 4 hours 6 minutes 4 seconds
- 1-69. In which of the following series of operations is the order in which the operations are performed important?
1.  $2 + 3 + 5$
  2.  $(3)(9)(7)$
  3.  $6 \times 8 \times 9$
  4.  $48 \div 6 \times 3$
- 1-70. The answer to the problem  $24 \div 4 \div 3 \div 2$  is
1. not defined
  2. 1
  3. 4
  4. 9
- 1-71. The order of operations is important if division or multiplication is involved with other operations, Use the rules pertaining to a series of mixed operations to calculate the value of  $6 \times 4 + 8 \div 2$ .
1. 16
  2. 28
  3. 36
  4. 48
- 1-72. The number 36 is a multiple of 1, 2, 3, 4, 6, 9, 18, 36, and
1. 10
  2. 11
  3. 12
  4. 13
- 1-73. An odd number when divided by 2 produces a remainder of 1.
- 1-74. The number 7 is a factor of
1. 11
  2. 17
  3. 24
  4. 35
- 1-75. What is the value of x if  $x = (3)(0)(4)(6)$ ?
1. 0
  2. 18
  3. 24
  4. 72